Design and Fabrication of Plasmonic Metal Nanostructures for Green Photonics

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Our research group aims to develop plasmon metal nanostructures for photothermal response. Surface Plasmon resonance is a phenomenon in which electrons in a metal interact with light and vibrate collectively. Semi-shell is metal nanostructures in which dielectric microsphere is partially covered with metal. It can cause surface plasmon resonance and efficiently absorb light. Semi-shell can be fabricated in large areas by colloidal lithography in a simpler process than conventional metal nanostructures and is expected to have a variety of applications. Selective emitter, which controls the wavelength of thermal radiation using the selective absorption properties of semi-shell, can be used to improve the power generation efficiency of Solar-thermophotovoltaics (STPV) that generate electrical energy from sunlight. Photothermal deformation of the half-shell by laser irradiation can be used in memory systems and color filters.

Short biography:

He is a master student in Utsunomiya University. He is focused to integrate Metal nanostructure with Surface Plasmon resonance.